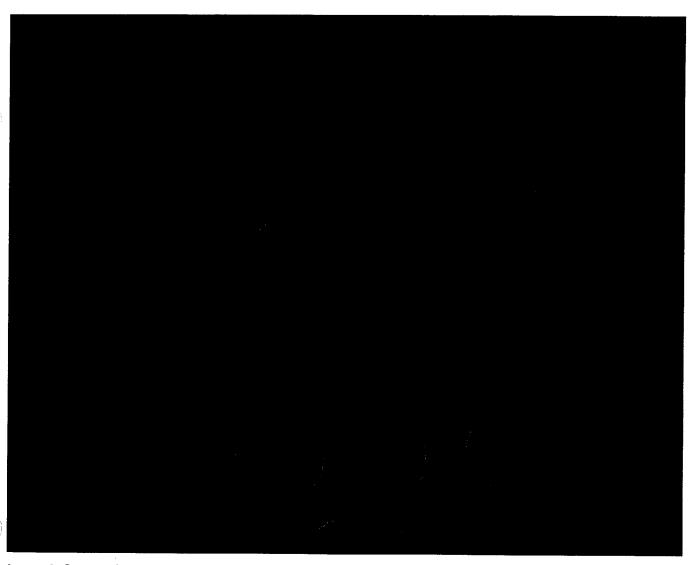


Service Manual

Supplement

1986 to 1988 COLUMBIA ParCar® Gas Golf Car/Utilitruck®



Issued: September 2002

99496-88

PATENT NOTICE

Columbia ParCar products are manufactured under one or more of the following patents: U.S. Patents - 2986162, 2987934, 2998808, 3116089, 3144631, 3144860, 3226994, 3229792, 3434887, 3559773, 3673359, 3680403, 3683716, 3709317, 4648473, Des. 225,626.

DISCLAIMER

To the best knowledge of Columbia ParCar Corp., the material contained herein is accurate as of the date this publication was approved for printing. Columbia ParCar reserves the right to change specifications, equipment, or design at any time without notice and without incurring obligation.

COLUMBIA Par Car

350 N. Dewey • P.O. Box 30 • Reedsburg, WI 53959
Phone (608) 524-8888 • Toll-Free (800) 222-GOLF • Fax (608) 524-8380
Web www.parcar.com • E-Mail infoparcar@parcar.com

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IMPORTANT INSTRUCTIONS

This envelope contains your 1988 Service Manual supplement. The supplement consists of new or revised pages required to convert the 1985 manual into a 1988 manual.

Remove the fasteners from your Service Manual and make the changeover as follows:

Replace the forward page and title page with the new pages.

The remaining new pages are marked either "Revised" or "Insert" at the top of the page.

A **revised** page supersedes its corresponding page in your manual. Remove the old page and substitute the revised page. The old pages which have been replaced should be destroyed.

An **insert** page is new and must be added in its proper place in the manual according to page number sequence.

SUPPLEMENT 1988 ParCar GASOLINE GOLF CAR/ UTILITRUCK

SPECIFICATIONS 1986 TO LATEST MODEL SERVICE INSERT

GASOLINE GOLF CAR MODEL G3/G4 GENERAL FEATURES 1986

Automatic Transmission with Reverse and Governed Forward Speed Adjustable Up to a Maximum of 12 mph (19.4 kph)

Clearance Radius (measured from turning center to outside edge of bumper)13'8"

DIMENSIONS

1986

Wheelbase	66.5	in. (169 cm)
Ground Clearance		4 in.(10 cm)
Weight		
Maximum Load Capacity	. 500	lbs. (227 kg)
Gross Vehicle Weight (cargo area)	1950	lbs. (885 kg)
Overall Length	106.5	in. (270 cm)
Overall Width	. 48	in. (122 cm)
Overall Height	47	in. (119 cm)

GENERAL FEATURES 1987 & 1988

Automatic Transmission with Reverse and Governed Forward Speed Adjustable Up to a Maximum of 12 mph (19.4 kph)

Turning Radius (measured from turning center to center of outside tire tread)

4-Wheel		<i>.</i> 			 	 					. !	9'
3-Wheel	(with	Direction	al Ba	r) .	 	 . ,					1:	2'
	(with	Steering	Whe	el)		 ٠.					. 9	9'

Clearance Radius measured from turning center to outside edge of bumper)

4-Wheel	 		 10
3-Wheel (with Directional Bar)	 		 13'8'
(with Steering Wheel) .	 ٠.		 10'8'

DIMENSIONS

1987	4-Wheel	3-Wheel
Wheelbase	65 in. (165 cm)	60.5 in. (154 cm)
Ground Clearance	4 in. (10 cm)	4 in. (10 cm)
Weight	735 lbs. (334 kg)	671 lbs. (304 kg)
Max. Load Capacity	750 lbs. (340 kg)	750 lbs. (340 kg)
Overall Length	96 in. (244 cm)	91 in. (231 cm)
Overall Width	44.25 in. (112 cm)	45.5 in. (115 cm)
Overall Height	47.5 in. (121 cm)	46.5 in. (46.5 cm)

1988	4-Wheel	3-Wheel
Wheelbase	65 in. (165 cm)	60.5 in. (154 cm)
Ground Clearance	4 in. (10 cm)	4 in. (10 cm)
Weight	735 lbs. (334 kg)	671 lbs. (304 kg)
Max. Load Capacity	750 lbs. (340 kg)	750 lbs. (340 kg)
Overall Length	94.62 in. (240 cm)	91 in. (231 cm)
Overall Width	44.25 in. (112 cm)	45.5 in. (115 cm)
Overall Height		

GASOLINE UTILITRUCK GENERAL FEATURES 1987 & 1988

Automatic Transmission with Reverse and Governed Forward Speed Adjustable Up to a Maximum of 12 mph (19.4 kph)

DIMENSIONS

1987

Wheelbase	. 66.5 in. (169 cm)
Ground Clearance	4 in.(10 cm)
Weight	920 lbs. (418 kg)
Maximum Load Capacity*	. 800 lbs. (363 kg)
Gross Vehicle Weight (cargo area)	1720 lbs. (780 kg)
Overall Length	106.5 in. (270 cm)
Overall Width	48 in. (122 cm)
Overall Height	47 in. (119 cm)

^{*} including driver and pasenger.

1988

Wheelbase	66.5 in. (169 cm)
Ground Clearance	4 in.(10 cm)
Weight	920 lbs. (418 kg)
Maximum Load Capacity*	1000 lbs. (453 kg)
Gross Vehicle Weight (cargo area)	1720 lbs. (780 kg)
Overall Length	106.5 in. (270 cm)
Overall Width	. 48 in. (122 cm)
Overall Height	47 in. (119 cm)

^{*} including driver and pasenger.

BRAKES

Drum brakes on rear wheels mechanically operated. Brake pedal incorporates ratchet lock for parking, with automatic release controlled by accelerator pedal.

STEERING — 4-WHEEL MODEL G4S AND E4S

LET'S TROUBLESHOOT IT

1986 TO LATEST MODEL: SERVICE INSERT

When will you need to remove and disassemble the rack and pinion? If you really don't have to, then don't because disassembly of the rack and pinion may require the destruction of the oil seal, part number 57183-88. If you destroy the oil seal when you unnecessarily disassemble the rack and pinion, then the oil seal may not be covered by warranty. The only time in the past that we have had to disassemble the rack and pinion is when, through abuse, the pinion gets its gear teeth sheared off. A way to tell whether the pinion has sheared teeth is to turn the steering wheel. If the wheels turn normally, then the pinion does not have sheared teeth and disassembly of the rack and pinion is unnecessary.

If your ParCar experiences difficulty with the ball joints on the end of the rack, the rod ends connected to the steering arms or when the leaf spring is not centered. You must then examine front suspension before making any alignment, for the bushings may be worn inside the tube of the A-arms. Then you must replace worn or broken parts and make a camber adjustment.

ADJUSTMENT

Toe In — Toe Out

The steering is controlled by rack and pinion gears. Adjustment is made on level surface with correct tire pressure of 18 PSI, wheels set straight. With a fixed rod or bar 27-1/2 in. wide place between wheels, to determine correct distance, then loosen jam nut and by turning tie rod make the proper adjustment. Make sure the welded stops located on the steering arms, after adjustment, are in contact with the king pin shackle when the steering is extended fully to the right and the left.

Camber adjustment is made with a bolt that goes through the A-arm. Place car on hard level surface. Set steering wheel at the midpoint or center. Using a carpenter square, place it against front wheel. Loosen nut 43946-88 and tilt wheel in direction required to achieve 0 degrees camber.

CAUTION

Disassembly of the rack and pinion assembly may require destruction of the oil seal, part number 57183-88.

DISASSEMBLY

(Remove rack and pinion from the ParCar)

It's easier to remove the rack and pinion from the ParCar if the front body, part number 50300-86, and other parts are first removed. However, it is possible for a person who is very familiar with the procedure to remove the rack and pinion, primarily by feel, without removing the front body.

To remove the front body, you must first remove eight screws: one on each side, 4 underneath, and 2 under the front bumper. Next you must remove the steering wheel. Remove the two screws holding the scorecard holder, then remove the scorecard holder. Remove the main nut holding the steering wheel on. Please refer to steering section of the service manual to remove the steering wheel. Next, slide the front body up off the steering column.

The other parts that need to be removed before the rack and pinion is removable include: Unpluging the keyswitch, the cable tie on the console, disconnecting the choke cable at the carburetor, and disconnecting the tie rod ends from both sides of the rack and pinion.

Next, remove one bolt, the one closest to the rack and pinion, holding the universal joint. Then remove the 3 bolts holding the rack and pinion to the frame. Maneuver the splined and of the universal joint off of the pinion. Lastly, by pushing the rack all area to the ParCar's right side, lift out the rack and pinion.

WHEEL BRAKE ADJUSTMENT

986 TO LATEST MODEL: SERVICE INSERT

The gasoline and electric are fitted with cable operated drum type rear wheel brakes with mechanical wear adjusters.

The breaking function and break pedal free travel of each car should be checked monthly or as necessary to determine the need for adjustment.

The brake cables and brake shoes will need to be adjusted if the brake pedal free travel becomes excessive as indicated by parking brake locking in upper notch of ratchet.

TO ADJUST BRAKES PROCEED AS FOLLOWS:

- Raise rear wheels of car off ground and support with stands.
- 2. Remove rubber protective boots from brake adjusters on brake backing plates.

 While rotating rear wheel turn adjusting screw in until brake locks. Back off adjusting screw until wheel rotates freely (approximately 5 clicks). Replace boot. Adjust opposite brake in same manner.

BRAKE CABLE ADJUSTMENT:

After completing brake shoe adjustment above, adjust brake cable linkage as follows if necessary:

- 1. Loosen locknut on brake rod clevis front and rear.
- Turn rod to shorten rod as necessary to provide tension on brake cables without allowing brakes to drag.
- 3. Tighten locknuts on brake rod.
- 4. Check free travel of pedal and brake function.

ACCELERATOR CABLE ADJUSTMENT

1986 TO LATEST MODEL: SERVICE INSERT

1986 — 1987 4-wheel gasoline ParCars.

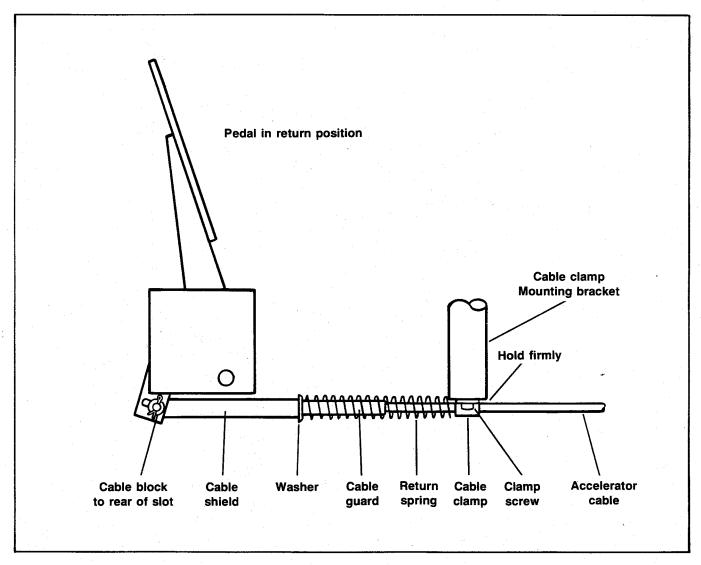
This insert is to provide you with Columbia ParCar's factory recommended accelerator cable adjustment to prevent cable from bending.

WARNING

To prevent accidental start-up and possible personal injury, disconnect both negative and positive battery cables.

 Loosen 2 cable clamp screws to allow cable to slide freely.

- With accelerator pedal fully depressed, push cable forward into cable shield as far as possible. Hold cable firmly at clamp mounting bracket and slowly let pedal return.
- 3. Pull cable out of shield 1/4" and re-tighten clamp screws.
- To insure proper adjustment, refer to diagram below.
 Note position of cable block in slot and length of cable guardd protruding from shield.
- Proper installation of throttle control wire is accomplished by bending the wire over the throttle to hold throttle closed. The wire must pull the accelerator pedal arm connection to the rear of slot.



ACCELERATOR CABLE ROUTING

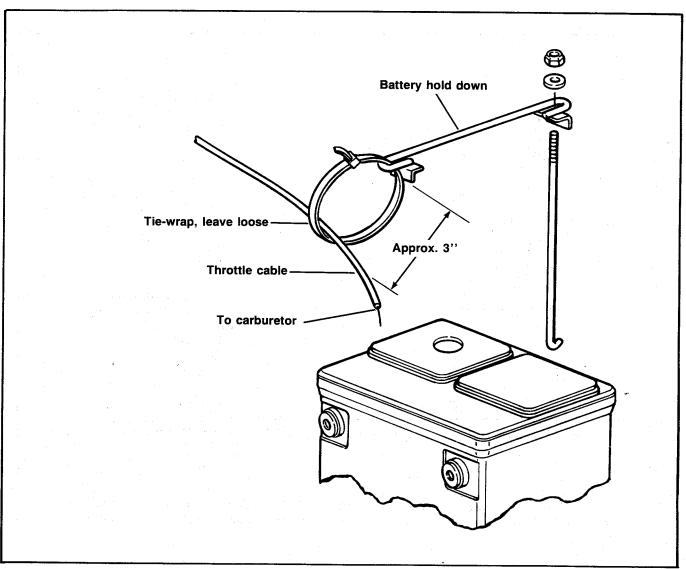
1986 TO LATEST MODEL: SERVICE INSERT

Route the throttle cable to prevent chaffing against the solenoid and/or circuit breaker. This will prevent the inner cable housing from being exposed, creating the possibility of an electrical short circuit.

If necessary, prevent this from occurring by installing 10" plastic tie wrap, part number 10043, through battery hold down eye and around throttle cable as shown below.

NOTE

Do not pull tie wrap tight.





BACKFIRE PREVENTION

1986 TO LATEST MODEL: SERVICE INSERT

There are many causes for backfiring. Some of the most common can be eliminated through simple adjustments. A good example would be the throttle not closing completely. Idle set screw should be backed off, then turned in to touch throttle lever. It should also be noted that the throttle lever spring is designed to open the throttle. Therefore, if the accelerator cable is properly adjusted it must close the throttle lever when the accelerator is returned to stop position. This prevents the engine and muffler from loading up with fuel while coasting. When the accelerator pedal is depressed the electrical circuit is activated and excess fuel is detonated. Check the micro switch adjustment to ensure that it is activated before the throttle starts to open. To check for proper sequence, set parking brake. As accelerator is depressed:

- 1. Park brake releases.
- 2. Micro switch activates (clicks)
- 3. Throttle lever starts to open.

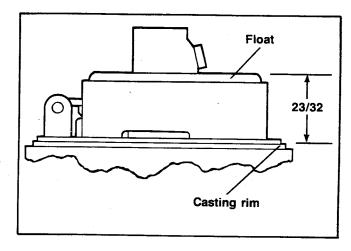
Reference page 6-4-A for correct adjustment.

In cases of steady backfiring and/or fluttering, the low speed adjustment screw may need to be reset. Carefully turn screw in until it stops. Then back out 3/4-1 turn. An additional 1/4 turn may be needed in some cases. Turning counter clockwise increases fuel flow. A misadjusted float will produce the same symptoms, either allowing too much or too little fuel into carburetor.

Pictured below are float settings:

CARBURETOR ADJUSTMENT

A. For the 1986-87 WHL9 and 1988 WHL10 carburetor adjustment is as shown:



GOVERNOR CABLE ADJUSTMENT

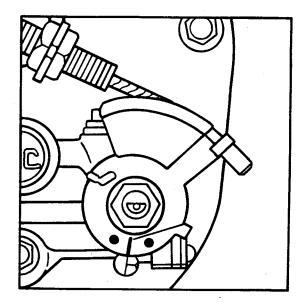
B. Adjust the no load engine speed to 3150 rpm by moving the adjustment cable nut with the rear tires blocked off the ground. Be sure vehicle won't slip off the block and cause a runaway vehicle.

WARNING

Raise the rear of the golf car and block it in place because a runaway vehicle can cause injury or death.

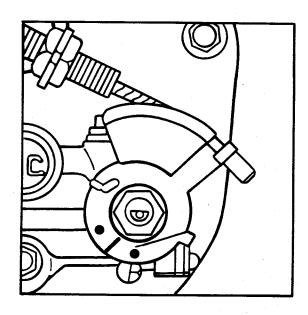
OIL INJECTION

1986 TO LATEST MODEL: SERVICE INSERT



The above diagram shows the oil injection setting recommended in 1986 and 1987.

The setting started in 1988, that will increase the oil flow to the engine, is shown in the diagram below. We suggest that all pre-1988 models be readjusted as shown below. The setting shown below will have a particular value for extended runs such as non golf-operations. The additional oil will increase bearing and seal life as well as cylinder lubrication.



KEYSWITCH CONTINUITY TEST

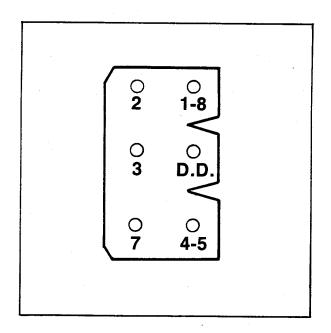
1986 TO LATEST MODEL: SERVICE INSERT

The purpose of this test is to determine if your keyswitch, part number 71780-88, is defective.

Since it will be difficult for the customer to identify the wires by the numbers on the keyswitch base, the wire numbers will be identified on the receptacal housing connected to the keyswitch (as shown below).

When the key is in the "forward" position, the pairs of wires that will show continuity are 1 & 2 and 5 & #6 the open stud on the keyswitch.

When the key is in the 'reverse' position, the pairs of wires that will show continuity are 3 & 4 and 7 & 8.



SOLID STATE IGNITION SYSTEM

1986 TO LATEST MODEL SERVICE INSERT

The new solid state breakerless ignition system can be installed on 1969 thru 1985 gasoline golf cars, utilicars, and utility vehicles.

The electronic ignition module assembly, P/N 30509-86, can be fitted to 1969 thru 1985 cars without modification. However, one of three different rotors must be used depending on the model year and type of timer cam on the engine. See illustrations 1, 2, and 3 for the different rotors and their applications.

To install solid state ignition, proceed as follows:

- 1. Remove timer cover and gasket.
- 2. Disconnect black timer wire from negative (-) terminal of ignition coil.
- 3. Remove complete breaker plate assembly with points and condensor and discard.
- 4. Position appropriate type rotor on end of timer cam with exposed magnets facing down towards the engine. Press rotor all the way down onto the cam. NOTE: 30500-69 and 30500-82 rotors have two small ears which must index over end of crankshaft.
- 5. Position module in timer compartment with pick up located in the 4 o'clock position. Install retaining screws and washers finger tight.
- 6. Position crankshaft on the forward timing mark. 1969 1981 with mark on flywheel in center of timing hole in fan housing. 1982 and later with two lines on fan hub aligned with pointer on center of fan housing.
- 7. Attach black wire from module to negative (-) terminal of ignition coil and blue wire from module along with blue wire from microswitch to positive (+) terminal of ignition coil.

- 8. To set ignition timing statically, remove spark plug from cylinder head. Position plug on top of air shroud so base contacts shroud retaining bolt. Attach spark plug wire to plug. Attach a jumper wire between battery positive (+) terminal and coil positive (+) terminal. Position crankshaft in the forward advanced timing position. Move ignition module clockwise the full extent of the slotted holes, and then, counter clockwise until a spark occurs at the plug. Lock down retaining screws at this point.
- 9. Timing can also be adjusted or checked using an automotive strobe timing light.

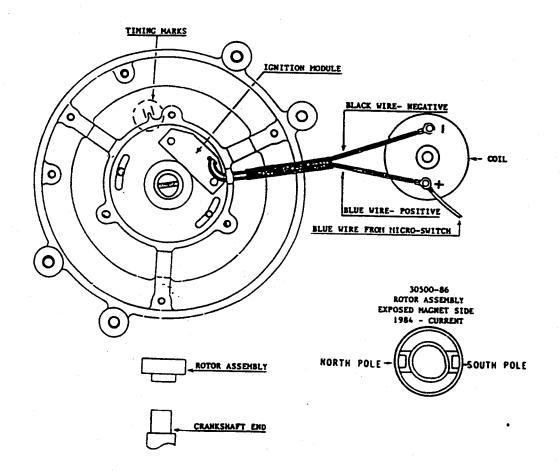
WARNING

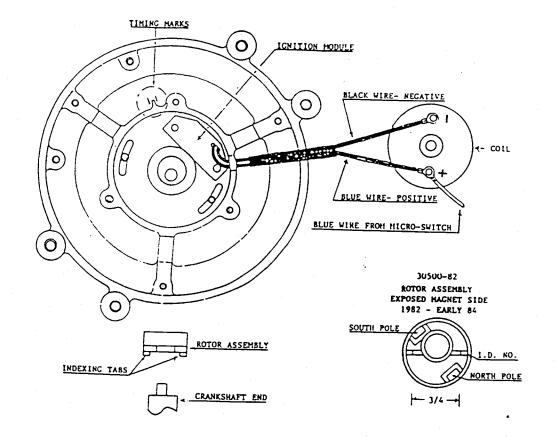
When using strobe timing light method, the engine must be running. Support rear of vehicle securely with one wheel off ground. Keep hands away from turning components.

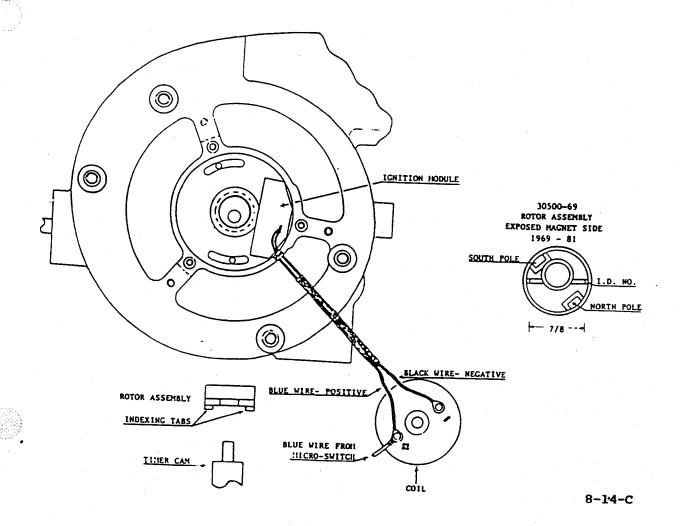
WARNING

The strobe light will cause rotating engine and drive components to <u>APPEAR</u> to stand still although they are actually turning. Keep hands and tools away from rotating components.

Run engine and shine light on timing marks. Stop engine and move module as required to align marks. Lock down retaining screws and recheck timing.







STARTER TEST

1986 TO LATEST MODEL: SERVICE INSERT

NOTE

This test should be made only after eliminating other possible causes such as a discharged battery, loose or corroded battery cables, faulty wiring connection, some mechanical failures within the engine or a slipping belt.

To perform this starter test you will need 3 pieces of wire capable of withstanding the current from a 12 volt battery.

WARNING

Remove spark plug wire from spark plug to prevent accidental start-up and possible personal injury.

Attach one wire to the terminal labeled "A2" and connect the other end to the terminal labeled "F1". Then attach the second piece of wire from the terminal labeled "A1" to the frame or another suitable ground, away from the gas tank.

WARNING

A piece of potentially live wire may cause sparks and result in an explosion if placed near the fuel tank.

Lastly, attach the third wire from terminal labeled "F2" to the positive terminal of the battery. If the starter generator fails to start the engine, difficulty is isolated within the starter generator. Internal tests on the starter generator may be made to find out where inside the difficulty lies.

This test checks the starter generator by itself. You can use this test to identify whether the starter is defective with certainty.

IGNITION MODULE FIELD TEST

1986 TO LATEST MODEL: SERVICE INSERT

The following procedure is a simple test which can be easily performed using a standard digital volt meter.

REQUIRED EQUIPMENT

- Volt Meter *Special requirement Must have a diode test. (Similar to a Radio Shack meter 22-171 \$24.95).
- Any tools necessary to remove the wires from the ignition module to the coil.

PROCEDURE

- Remove the black wire from the ignition module, where it connects to the coil.
- Connect the positive lead from the volt meter to the balck wire.
- Connect the negative lead from the volt meter to the motor block or the negative battery terminal.

- Remove the spark plug wire to insure the engine won't start.
- Turn on the meter and set it to the diode test. It will either show a flashing number, or a value around .55V. (Any value, except the open state, is acceptable. All that the value shows is that the transistor in the module is conducting.)
- Turn the ignition key to on. While watching the meter, turn the flywheel on the motor by hand. The value (.55V) should be on for approximately half the rotation and the open state (the flashing number) for the other half of the cycle.
- If the states listed in step 6 are not what you are seeing, either the meter is not properly connected or the ignition module is bad. Double check the meter connections.

COLUMBIA Par Car

Columbia ParCar Corp.

350 N. Dewey Ave. • P.O. Box 30 • Reedsburg, WI 53959 Phone: (608) 524-8888 • Fax: (608) 524-8380 Web: www.parcar.com • E-Mail: infoparcar@parcar.com